THE EVALUATION OF A STANDARDIZED DEPRESSION SCREENING PROTOCOL

The Evaluation of a Depression Screening Protocol in a Pediatric Primary Care Office

DNP Final Project

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Nursing Practice in the Graduate School of The Ohio State University

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Dedication

I would like to dedicate my DNP project to my mother, Eleonore Fry. My mother had depression as long as I can remember, yet she was always there to support me. She was the kindest and most caring person I knew, yet she lived in a world of darkness and despair. She always encouraged me to be the best me I could be. I hope this small step to address this debilitating illness will offer hope for our most precious commodity, our children and prevent the long term consequences that it may cause.

Abstract

Background: Adolescent depression is a disorder that has significant consequences to the individual, family and community. Depression is thought to affect up to 15% of adolescents yet only 1 in 5 are actually recognized and appropriately treated. Most adolescents visit their primary care provider but less than half of pediatric primary care providers screen for depression. Depression screening is the first step to recognition of depression.

Purpose: To evaluate if a protocol using the PHQ-9 A as a depression screening tool within a primary care clinic made a difference by increasing the number of diagnosis of depression and/or the number of referrals to psychology or psychiatry.

Method: This quality improvement project was instituted at four pediatric primary care sites. The four pediatric providers incorporated the use of the PHQ-9 A into their practices for adolescents age 11-17 coming in for a well visits. Data analysis was completed utilizing data from a three- month period prior to the protocol implementation and a three -month prospective period post implementation of the protocol.

Results: The primary outcomes measured were diagnosis of depression and referrals to psychology and/or psychiatry. The depression diagnosis rate increased from 9% to 12% which could indicate a potential of 17 more adolescents were recognized as depressed with using the protocol. The rate of referral increased from 7.6 % to 11 % which can indicate that a potential of 19 more adolescents were referred appropriately to a mental health care provider with the use of the protocol.

This Doctor of Nursing Practice quality improvement project was designed to evaluate the use of a depression screening protocol in a pediatric primary care office.

Chapter One

Introduction

Adolescent depression is recognized as a serious disorder with chronic morbidity and a significant incidence of mortality (Zuckerbrot, Cheung, Jensen, Stein, & Laraque, 2007). The majority of first episodes of depression occur in adolescence (Kessler, Berglund, Demler, Merikangas, Walters, 2005). Estimates of prevalence of major depressive disorder in the adolescent years (ages 12-18) range from 6% to 15% (Cheung, Dewa, Levitt, & Zuckerbrot, 2008; Williams, O'Connor, Eder, & Whitlock, 2009). Depression in adolescence is associated with significant morbidity, increased likelihood of comorbid mental and substance use disorders, and an increased risk of suicide (Evans, 2009). Unidentified and untreated screening protocols of early-stage mental illnesses in children and adolescents are associated with school failure, teenage childbearing, unstable employment, substance use, violence and high risk of developing co-occurring mental disorders (National Institute of Mental Health, 2005). Although research demonstrates that the mental health needs of adolescents require consideration, the reality is that only 20% receive the appropriate mental health services due to a lack of appropriate screening protocols (Foy, Perrin, & for the American Academy of Pediatrics Task Force on Mental Health, 2010). In 2009, both the U.S. Preventative Task Force and the Institute of Health recommended screening for depression in adolescents aged 12-18 (National Research Council, 2009). Although a variety of screening tools have proven useful in detecting depression in adolescents, limited data describing screening practices exists (Williams et al., 2009).

Depression screening in the primary care office is the first step in providing safe, effective mental health care to adolescents. Youth who have mental health issues are more likely than their peers to visit their primary care providers (Hamrin, Antenucci, & Magorno, 2012).

Despite the current prevalence of mental health disorders in adolescents, the rate of depression screening in primary care is only 20% to 40% (Gardner et al., 2010; Melnyk et al., 2010). In an informal survey of pediatric primary care providers at a hospital-based clinic (N=30), 63.3% of providers reported screening for anxiety or depression with only 23.3% reporting use of a standardized screening instrument. According to Zuckerbrot (2007) primary care clinicians rely on the use of symptoms and family concerns to identify depressed adolescents. Other surveys confirmed that very few pediatric providers have integrated a standardized assessment tool to identify adolescent depression. Screening in primary care has been shown to improve adolescent care by identifying depressive symptoms in adolescents and the initiation of appropriate treatment at an earlier point in the disease course (Williams et al., 2009). The US Preventative Task Force, the National Institute for Health and Clinical Excellence (NICE), the American Academy of Pediatrics (AAP) as well as the American Academy of Child and Adolescent Psychiatry (AACAP) recommend depression screening in adolescents as a quality of care initiative (Zuckerbrot et al., 2007).

Screening in primary care has been shown to improve quality of care. Therefore primary care providers need to have access to quality screening protocols based on best practice evidence in order to provide quality patient services. The quality improvement committee identified a gap in depression screen process within this primary care clinic. As a result a screening protocol using a depression screening tool based on best evidence providing standardization of depression screening in adolescents within a primary care clinical was implemented.

Purpose

The purpose of this quality assurance project was to evaluate if a protocol using the Patient Health Questionnaire (PHQ -9A) as a depression screening tool within a primary care clinic made a difference by increasing the rate of diagnosis of depression and/or the number of referrals to psychology or psychiatry.

Clinical Practice Problem Statement

Literature to support this project was collected based upon the following PICOT: In a pediatric primary care clinic (P) does the implementation of a depression screening protocol (I) compared to no protocol (C) affect the rate of depression screening referrals and/or diagnosis of depression (O) over a total 6 month period.

Literature Review

Mental illness is pervasive. The World Health Organization states that mental illness results in more disability in developed countries than any other group of illnesses, including cancer and heart disease. The economic burden of mental illness in the United States is substantial, and was approximately $300 billion in 2002 (Evans, 2009). Mental illness is also associated with chronic diseases such as cardiovascular disease, diabetes, and obesity. According to Dr. Ileana Arias, Principle Deputy Director for the Center for Disease Control and Prevention, "It is imperative to monitor levels of mental illness in order to strengthen our prevention efforts" (Arias, 2011). In order to monitor levels of mental illness, it must first be recognized and diagnosed. Despite the current prevalence of mental health disorders in adolescents, the rate of depression screening in primary care is only 20% to 40% (Gardner et al., 2010; Melnyk et al., 2010). In 2009, the IOM published a report on the prevention of mental, emotional, and behavioral disorders among young people. While there is generally a limited body of research,

the IOM concluded, “Of those few intervention evaluations that have included some economic analysis, most have presented cost benefit findings and demonstrate that intervention benefits exceed costs, often by substantial amounts” (O’Connell, Boat , Warner 2009). The problem of identifying mental disorders is increasingly recognized as an important health care issue. Mental disorders result in significant health care costs and represent 20% to 30% of the primary care patient population (Schmitz, Kruse, Heckrath, Alberti, & Tress, 1999). Fully 21% of children and adolescents in the United States meet the diagnostic criteria for a mental health disorder with impaired functioning. It is even more striking that the prevalence of children who do not meet criteria for a DSM-IV disorder but who have *clinically significant impairment* is estimated to be twice the prevalence of children with officially diagnosed severe emotional disorders (American Academy of Pediatrics, 2009). Most children and youth with mental health conditions that result in functional problems are more likely to be seen in their primary care setting than in the specialty mental health system. In addition, children with chronic medical conditions have more than two times the likelihood of having a mental health disorder. More than 50% of American adults who have mental health disorders had symptoms by age 14, and 75% had symptoms by age 24 (American Academy of Pediatrics, 2009; O’Connell , Boat , Warner , 2009.). All of these factors point to the need for preventive and early identification strategies in the integrated care system by a primary care clinician; however, it is estimated that only 20% of youth with a mental health problem are appropriately identified and treated (Chisolm, Klima, Gardner, & Kelleher, 2009(O’Connell , Boat , Warner , 2009; O’Connell ME, Boat T, Warner KE, 2009). It is estimated across the United States that 8% of adolescents (2 million youths aged 12-17) experience a major depressive disorder, yet only 39% receive treatment (Kessler, Berglund, Demler,Merikangas, Walters, 2005).

Depression is associated with impaired functioning, substance abuse and increased risk of suicide (Wells, Tang, Carlson, & Asarnow, February 2012). The National Survey on Drug Use and Health found that 8% of youths — totaling 1.9 million 12 to 17-year olds — experienced a major depressive episode in 2010. These same youths, when compared to their counterparts who had not experienced major depression, were more than twice as likely to have engaged in illicit drug use. The same study found that illicit drug use among youth ages 12 through 17 was 10.1%, and had risen in recent years. The rates are similarly high for alcohol consumption; heavy and binge drinking were reported by a full 22.1% of individuals ages 12-20 (Substance Abuse and Mental Health Services Administration, 2012).

Suicide is the third leading cause of death among teens and young adults. It is estimated that 45% of victims visited their PCP in the month prior to their deaths, and that 77% had contact with their PCP in the prior year (Bostwick & Rackley, 2012).The majority of adolescent suicide victims exhibit symptoms of a psychiatric disorder that is identifiable by screening for at least a year before their deaths (Luoma, J. Martin, C. Pearson, J., 2002). With these staggering statistics, it is imperative that the pediatric primary care community includes depression screening within primary care visits.

Most mental health visits are at primary care sites. Almost one-quarter of pediatric primary care visits involve behavioral, emotional or developmental concerns (Cooper S. Valleley RJ. Polaha J. Begeny J.Evans JH., 2006). One-third of mental health visits by privately insured youth are to a PCP rather than a mental health specialist (D'amico EJ., 2005). More than 70% of adolescents see a physician once per year and 50% have a routine health visit each year, but only 23% of pediatricians and family physicians routinely screen for mental health disorders (Frankenfield, Keyl, Gielen, Wissow, Werthamer, Baker, 2000). Although the majority of

mental health visits occur in the primary care office with limited screening practices in place, general practitioners prescribe the bulk of antidepressants. As many as two in three depressed adolescents were not identified by their primary care provider and did not receive any treatment (Stephan, Mulloy,, Brey , 2011).

Adolescent depression screening is recommended. The American Child and Adolescent Psychiatric Association recommend that the psychiatric assessment of children and adolescents should routinely include screening questions about depressive symptomatology. Clinicians should screen all children and adolescents for key depressive symptoms including depressive or sad mood, irritability, and anhedonia (Luoma, J. Martin, C. Pearson, J., 2002; O'Connell , Boat , Warner , 2009.). A diagnosis of a depressive disorder should be considered if these symptoms are present most of the time, affect the child's psychosocial functioning, and are above and beyond what is expected for the chronological and psychological age of the child. To screen for depressive symptoms, clinicians could use checklists derived from the DSM or ICD-10 criteria for depressive disorders, clinician-based instruments, and/or child and parent depression self-reports (Zuckerbrot et al., 2007).

According to Dr. Richardson, associate professor of pediatrics at the University of Washington, an adolescent medicine specialist at Seattle Children's, and an affiliate investigator at Group Health Research Institute, it is important to screen not only because depression is relatively common among adolescents, but also because effective treatments exist. Her team compared the PHQ-9 to the more labor-intensive gold standard, an independent structured mental health interview (the Child Diagnostic Interview Schedule, DISC-IV) showing its sensitivity (89.5%) and specificity (77.5%) in teens are similar to those in adults. The team concluded that the PHQ-9 is an excellent choice for providers and researchers who want to

screen for depression in teens in primary care (Hacker et al., 2006). Similarly, a cohort study of 444 youths ages 13-17 in a large health care setting demonstrated that depression screening using the PHQ-9 was a positive indicator for depressive symptoms (Richardson et al., 2010).

In a study of 229 African American adolescents in an urban school setting, 20% of all youth screened endorsed current or previous suicidal ideation or attempts, and over 90% of youth expressed at least some problem with depression or irritability. This study showed that early detection of risk factors through screening can result in earlier treatment and avoidance of suicidal crisis (Brown & Grumet, 2009). Furthermore in a large urban pediatric practice 654 Latino adolescents ages 13-20 were screened for depression. Providers reported acceptance of the standardized screening tool, indicating the tool made them more comfortable discussing depression and suicide with their patient populations (Rausch, Hametz, Zuckerbrot, Rausch, & Soren, 2012).

Hoek at al. conducted a randomized control trial (RCT) of 84 adolescents in 13 primary care practices to determine if an Internet-based depression screening protocol improved outcomes. Using a depression screening tool, specifically the PHQ 9, demonstrated reliability in identifying depression in the adolescent population (Hoek et al., 2011). Incorporating a standardized screening tool for suicide into the medical record of several pediatric and adolescent primary care clinics, along with provider education about suicide and prevention, doubled the suicide screening rate and quadrupled the number of individuals identified as having suicidal thoughts (Bostwick & Rackley, 2012). Although this study had limitations, it revealed the need for suicide screening in the adolescent population. Pediatric clinics in a large health care system were involved in a randomized trial to determine if immediate provider and patient feedback on depression screening vs. delayed feedback improved behavioral health follow up.

Although the study did not have the expected results about follow up, it did reveal that depression screening in the adolescent sample was significantly associated with a higher probability of behavioral health services follow-up visits (Chisolm et al., 2009). The review of the literature substantiates the assumption that screening with a validated tool is useful in identifying children with mental health problems in a variety of settings (Borowsky & Mozayeny, 2003; Zuckerbrot et al., 2007).

Depression screening tools for adolescents include the Beck Depression Inventory II (BDI), Patient Health Questionnaire (PHQ -9), and the Child's Depression Inventory (CDI). The US Preventive Task Force found that the PHQ -9 and the BDI both demonstrated good sensitivity and specificity in the primary care setting as they can be completed in 5-10 minutes and scores are easily calculated (Hamrin & Magorno, 2010). The BDI for ages 13-18, with 21 questions has a reliability of 0.93-0.96 with a cost of $75.00 for manual and 25 record forms. The CDI, ages 7-17, with 27 questions has a cost of $100.00 for manual and 25 record forms with a reliability of 0.66-0.82. The PHQ 9A, for ages 13-18 years, has 9 items with reliability of 0.76 which can be downloaded with no cost (Hamrin & Magorno, 2010). In developing guidelines for adolescent depression screening for the AAP, the steering committee completed a systematic review of the literature with only 10 of 25 articles presenting psychometric data such as sensitivity or specificity on screening. Additionally, it was confirmed that very few pediatric providers utilized a standardized screening tool to identify depression in adolescents (Zuckerbrot et al., 2007). In 2009, the US Preventive Services Task Force (USPSTF) published their report calling for annual depression screening for all 12 to 18-year olds in primary care settings. This recommendation was based on the findings that screening questionnaires identify depression in adolescents, which in turn can lead to effective treatments that are available for this population

(Pietsch et al., 2013; Williams et al., 2009). The UPSTF completed a meta- analysis/systemic review of 4979 abstracts and 444 complete articles and found no data describing health outcomes among screened and unscreened adolescent populations but did conclude that there was data to suggest that primary care screening tools may accurately identify depressed adolescents. (Williams, O'Connor, Eder, & Whitlock, 2009).

The Task Force on the Vision of Pediatrics 2020 envisions that by 2020 mental health care will compose a significant segment of general pediatric practice (Foy et al., 2010). As health care providers of children – our most precious commodity – we must implement evidence-based practice measures that support the mental health of this population. Depression screening is one of the first processes that can lead to improved mental health of adolescents.

Significance to nursing and health care.

According to the Institute of Medicine (IOM) report, mental, emotional and behavioral disorders among young people represent a public health concern for several reasons: (a) they cause suffering to individuals and their families; (b) they limit the ability to reach normal goals for social and educational achievement; (c) they increase the risk of further psychopathology, functional impairment, and suboptimal functioning throughout life; and (d) they impose heavy costs to society because of the resultant need for extra care, possible social disruption, and the risk that affected young people will underperform as adults. The cost of mental health disorders in youth is estimated at $247 billion annually (Evans, 2009). The American Academy of Pediatric's mental health guideline, created to support primary care providers, states pediatric primary care clinicians should evaluate for depression in adolescents at high risk as well as though who present with emotional problems and clinicians should use standardized depression tools to aid in the assessment (Zuckerbrot et al., 2007).

The time has come to recognize the critical need to focus on the mental health of our youth. As depression is a diagnosis that has been shown to have long term consequences to both the individual and family as well as society, health care providers must address the problem in a systematic construct. Depression screening in the adolescent population using standardized tools is a best practice model for primary care offices with a recommendation of B by the US Preventive Task Force. Using the PHQ- 9 A for depression screening in the pediatric primary care office is a one tool that can be used quickly and has proven to have reliable results for the adolescent population.

Essentials

The American Association of Colleges of Nursing (AACN) *Essentials for Doctoral Education for Advanced Practice II, III and VII* will provide the grounding for this scholarly project.

Essential II: Organizational and systems leadership for quality improvement and systems thinking. Using the findings from the evaluation of the quality project pertaining to adolescent depression screening in primary care will promote the further development and coordination of identifying mental health disorders and treatment among PCPs, including advance practice nurses and pediatricians.

Essential III: Clinical scholarship and analytical methods for evidence-based practice. Reviewing the literature using evidence-based guidelines and criteria are imperative to move this project forward. In a study on the mental health and evidence-based practice of PNP curriculum it was noted that many students commented that their preceptors and clinical sites did not incorporate screening tools. When mental health screening is not routinely carried out, early identification and management of mental health concerns cannot be realized (Melnyk et al.,

2010). This project evaluated a depression screening protocol (DSP) that was developed based on best evidence using guidelines set forth by the AAP, AAACAP and US Task force.

Essential IV: **Clinical prevention and population health for improving the nation's health.** The AAP has developed many policy statements pointing to the importance of the population perspective in providing pediatric health care services. Screening for depression in primary care setting could help clinicians identify missed cases and increase the proportion of depressed children and adolescents who initiate appropriate treatment. It could also help clinicians to identify cases earlier in the course of disease(Williams et al., 2009) All members of the community are affected by the health of the individual members; thus, the mental health of children affects the communities in which they live (including family, school, neighborhood, public services) as well as these entities having an effect on each child (Foy et al., 2010). Value-based care promotes population health and clinical prevention. The PNP role includes providing care to children, adolescents, and their families that emphasizes early intervention, screening, prevention, and the treatment of physical, mental, behavioral, and emotional disorders (DiMarco & Melnyk, 2009).

Chapter Two

Theoretical Framework

This project was based on the Institute of Health's Quality Improvement Model (. Langley, 1996). This model is a roadmap to initiating and implementing changes to practice that will improve the quality of care. Evidence-based research provides the groundwork of this project, while the quality improvement model will drive the project forward. There are three essential questions to examine in order to understand the project's objective: (a) What are we trying to accomplish?; (b) How will we know that a change is an improvement?; and (c) What changes can we make that will result in improvement?

What are we trying to accomplish? In order to offer more comprehensive mental health services and create a culture of addressing mental health needs, one new screening protocol, utilized by 50% of the pediatric providers selected and 100% within 6 months of implementation.

How will we know that a change is an improvement? This is the portion of the model in which the project was evaluated. The project evaluated the implementation of utilizing a standardized protocol that includes a depression screening tool based on the rate of referrals to psychology or psychiatry by the providers who participated in implementation of the.

What changes can we make that will result in improvement? This portion of the model involves the incorporation of evidence-based practice for depression screening of adolescents in the primary care office based on the results of the quality project. The aim for this project was to evaluate the implementation of a best practice protocol utilizing a standardized depression screening tool in the pediatric primary care office.

To execute the changes needed and implement processes, the *plan, do, study, act* cycle framework was used. This learning cycle is a four-step process: planning a change, doing it on a small scale, studying the result, and taking action on what is learned (G. Langley et al., 2009).

The evaluation planning steps focuses on the who, what, where, and when of the process. Four pediatric primary care providers implemented the protocol including the PHQ-9 modified for adolescents to screen for depression in the adolescent population (Diagrams 1 & 2 .

The next step was to determine the measure to use to evaluate if implementing a depression screening protocol vs no protocol. For this quality project the use of diagnosis of depression and referral to psychology or psychiatry will use used to measure the implementation of a depression screening protocol. Analyzing the data and summarizing the findings are the elements of the evaluation portion of the cycle. The final step is to recommend and changes based on results. A key point in the cycle is to revise the plan based on findings, disseminate information and, based on the results, repeat the cycle. The act stage of the cycle is the dissemination of the information and thereby initiating a depression screening protocol throughout the entire pediatric primary care practices located within a large metropolitan healthcare system.

Chapter 3 Methods

Project Design

This was a quality assurance project intended to evaluate the rate of diagnosis of depression and/or referrals to psychology or psychiatry for depression of adolescents within a primary care clinic following the implementation of an evidence-based best practice depression screening protocol. Pre-existing quality metrics revealed depression screening were below the acceptable standards projected for this adolescent primary care clinic population. The current use of any depression screening tool for adolescents in the pediatric primary care setting was less than 25%. The pediatric primary care providers, in collaboration with the quality vice chair for community pediatrics has acknowledged the need to assess depression rates and supported the initiation of a new quality depression screening tool. A new depression screening tool was therefore incorporated into the protocol. The new depression screening protocol (DSP) uses a current standardized depression screening tool, the PHQ-9 A and implemented during all well visits for adolescents age 11-17 to identify depression.

Practice Change

Currently a new DSP is used. This project included quality assurance and evaluation of a depression screening protocol that provides a guideline for primary care providers to use during a well child/adolescent visit for ages 11-17. Following the protocol the primary care provider determines if there is a diagnosis of depression and whether to refer for further evaluation.

Setting

Four pediatric ambulatory sites were the setting for this quality assurance project. These sites provide primary health care services for adolescents in a five county area that include rural, suburban and urban regions.

Sample

The sample consisted of adolescent well visits for four providers who participated in the pilot of instituting the DSP. The four providers include one nurse practitioner and three pediatricians. The population for this sample was both male and female ages 11-17 years. It consisted of both private and Medicaid payers. Approximately 800 visits occur during a three month period within these four pediatric ambulatory sites.

Methods

The IRB for both The Ohio State University and Cleveland Clinic determined that this project was a quality assurance initiative which was exempt from the IRB approval process. The primary source of data for this project was pre-existing and is currently monitored by the community pediatric administrative department and reported to the pediatric quality leadership. Depression identification and referral to psychology and psychiatry were included in the quality metric reports. Diagnosis of depression was based on diagnosis codes (ICD 9) used by the four providers including 311F, 311FP, 311 DG, 311 BC, 311 BN, 296.20 BP, 296.20 BV, 296.90, and 309.0. The quality metrics report included data for the three-month retrospective period prior to protocol implementation (October –December
2013) and a three-month prospective period post protocol implementation (October –December 2014). A pre and post protocol implementation analysis was completed. All information was de-identified. A data collection form was created (Appendix B) Information has been kept confidential and contained within a locked desk draw within this student's office.

Procedure

This quality assurance project was implemented to evaluate a standardized protocol that was implemented in a primary care setting using the PHQ-9Adepression screening tool. Using an

evidence based screening tool (PHQ9A) to screen children ages11-17 during a well visit for depression, four providers incorporated this protocol into their practice.

1. The PHQ9 Awas given to all children ages 11-17 of these providers by the support staff when they came in for a scheduled well.
2. The support staff provided directions to the child on completion of the form.
3. The child completed the form and returned it to the provider.
4. The provider scored the PHQ 9 A, returned it to the support staff. Who then entered it into the patient EMR under the PHQ9 A questionnaire.
5. Following the PHQ9 A best practice guidelines a score of > 11 is considered positive for depression.

Data Analysis

Data analysis was completed for the project question as follows:

Question 1: Does implementing a DSP initiated upon a clinic visit, affect the overall number of referrals to psychology or psychiatry?

Question 2: Does implementing a DSP initiated upon a clinic visit, affect the number of depression diagnosis?

Comparison of pre and post protocol implementation data was done using parametric statistics. Pre and post rate differences using a t test that compares the number of post events to the number expected if there is no difference in the pre and post rates was assessed (Rosner, 2000). The absolute risk reduction (ARR) was used to assess the likelihood of reduced risk if the protocol is followed. Data results are scheduled to be presented to local staff and leadership. This will allow the stakeholders to determine future actions/directions prior to a possible multiple clinic wide implementation of the DSP.

Chapter 4 Findings

Results

The new DSP was implemented by four care providers from October 1st to December 31st, 2014. Following the three-month implementation data was collected. The primary outcomes measured included number of diagnosis for depression and/or number of referrals placed to psychology and psychiatry during a well visit. Data was collected during a three-month period before the DSP (October-December 2013) was implemented and 3 months (October-December 2014) after implementation. There was a total of 299 well visits pre implementation of the DSP and 266 post implementation of the DSP. A total of 565 adolescent well visits were noted over the six-month period (Table 1).

The depression rates were determined by extracted from the EMR using any of the following ICD 9 diagnosis codes 311F, 311FP, 311 DG, 311 BC, 311 BN, 296.20 BP, 296.20 BV, 296.90, and 309.0. Any notation to psychology and/or psychiatry was separately recorded in the EMR and extracted as a referral. The data analysis was completed for this project using the initial questions.

Question 1: Does implementing a DSP initiated upon a clinic visit, affect the number of depression diagnosis? The diagnosis of depression was documented 27 times pre DSP implementation and 32 times post DSP implementation (Table 1). This is a rate of 9% for diagnosis of depression during an adolescent well visit completed prior to implementation of DSP and 12% depression for adolescent well visit completed after implementation of DSP, which demonstrates a 3% absolute risk reduction. Therefore this suggests a DSP implemented over a three-month period or less will increase the rate of diagnoses of adolescent depression in a

primary care setting. Thereby leading to a 3% risk reduction in a missed identification of a depression diagnosis for adolescents between the ages of 11-17 year of age.

Question 2: Does implementing a DSP initiated upon a clinic visit, affect the overall number of referrals to psychology or psychiatry? The psychology and/or psychiatry referrals were noted as placed 23 times during an adolescent well visit prior to implementation of DSP for a rate of 7.6%. Following implementation of DSP there were 30 referrals placed during an adolescent well visit for a rate of 11%, creating an absolute risk reduction of 3.4%. Furthermore a DSP implemented over a three-month period or less will increase the rate of referrals of adolescent depression in a primary care setting. Thereby leading to a 3.4% risk reduction in a missed referral.

Table 1 Primary Care Depression Diagnosis and Referral

Provider	Year	N	Dx	Ref
1 pre	2013	62	6	5
1 post	2014	56	9	8
2 pre	2013	28	4	4
2 post	2014	22	4	4
3 pre	2013	69	7	5
3 post	2014	70	8	8
4 pre	2013	140	10	9
4 post	2014	118	11	10
Total Pre	2013	299	27	23
Total Post	2014	266	32	30
Total		565	59	53

Data is further presented as mean ± standard deviation for depression and referral. A Paired t test was performed to assess the change in number of depression diagnosis and/or referrals from pre to post DSP implementation at an overall significance level of 0.05, using JMP software (version 10.0, SAS Institute Inc., Cary, NC). There was no statistically significant

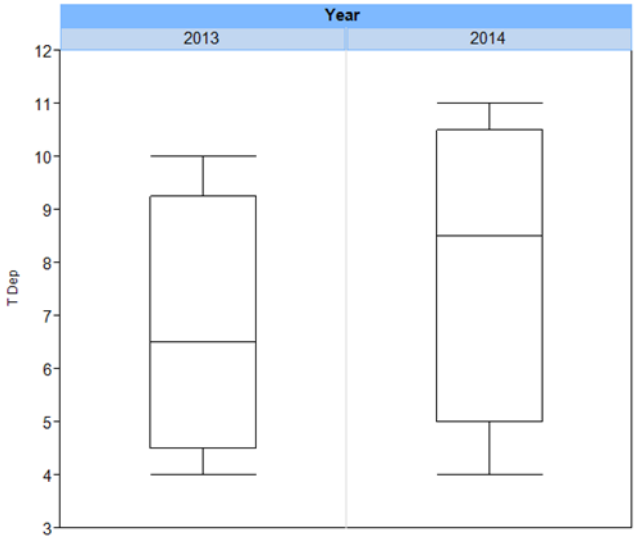
(p=0.15) difference in the number of depression diagnosis or number of referrals (p=0.10) over a total six- month period following the implementation of a DSP based on best evidence (Table2).

Table2.

Variable	Year 2013	Year 2014	p-value
Total Depression	6.7 ± 2.5	8.0 ± 2.9	0.14
Total Referral	5.7 ± 2.2	7.5 ± 2.5	0.10

Overall there was an increase in the total number of depression diagnosis and referrals of adolescences in this primary care setting following the implementation of the DSP. Figure 1 provides a revealing summary of the data. In 2013 depression diagnosis was only noted for and between 6-7 times whereas in 2014 the diagnosis of depression was noted between 8-9. There was increase in the median number from approximately 6.5 in 2013 to 8.5 in 2014 (Figure 1). In addition the proportion of intervention for depression was higher post DSP implementation.

Figure1. Boxplot of Total Depression Diagnosis in Year 2013 and Year 2014



Discussion

While the analysis of the project did not show a statistically significant difference in diagnosis of depression during an adolescent well visit or referral to psychology or psychiatry for an adolescent during the well vist with the use of a DSP, it did revealed that that using a standardized depression screening tool in adolescents in the primary care office may have a benefit of recognizing and diagnosing depression What's more recognizing depression in the adolescent during a well visit showed an increase in referral to psychology or psychiatry. Improving recognition, diagnosis and appropriate referral of depression in adolescents is a priority of health care professionals and has been a focus of discussion of the AAP and USPSTF. Screening for depression has been shown to provide an initial step in this process. (Zuckerbrot et al., 2007). The rate of screening for depression of adolescents in the primary care setting is only 20% to 40% (Gardner et al., 2010; Melnyk et al., 2010). According to Chisolm(2009) only 20% of adolescents with depression are identified and referred for appropriate treatment. In the current project there was a 3 % risk reduction in a missed depression diagnosis and a 3.4 % risk reduction in a missed referral. In our total sample size of 565 that could mean a potential of 17 adolescents over a 6 month period receiving a diagnosis of depression that would have been missed if the DSP is not used. Furthermore with this same sample population there may be 19 adolescents over a 6 month period who are referred to a mental health provider that would not have received a referral if the DSP in not in place. Although this may be a small percentage it may be the difference in preventing a devastating consequence of depression including suicide. According to Luoma (2002), the majority of adolescent suicide victims displayed symptoms that were identifiable by screening. An average of one young person every 1 hour and 54 minutes committed suicide in the US in 2010. (McIntosh, & Drapeau, 2012) With suicide as the third

leading cause of death of adolescents in the US, measures to identify and refer those as risk should be incorporated into the primary care.

The Agency for Healthcare Research and Quality (2014), in the Medical Expenditure Panel Survey notes that annual expenditures for mental health among school- age children averaged $2,192 in 2011. This does not take into account the visits to a medical provider for those children who may have undiagnosed depression and have multiple visits for associating symptoms such as headache, abdominal pain, sleep and appetite disturbance. These are costs that have not been directly related to undiagnosed depression but there is certainly a correlation. Juvenile detention facilities spend $100 million each year to house youth who are waiting for mental health services with over 70% of youth in detention have a diagnosable mental health disorder (Skowyra, K.Cocozza,J.2007) It has been estimated that the cost to US society of mental illness in youth is over 247 billion dollars and yet it estimated that the economic benefits of expanded diagnosis and treatment of depression is $7,100 annually or a return of $7 for every $1 invested (Agency for Healthcare Research and Quality, 2014)

Conclusions

Based on the project results, the use of using a standardized depression screening tool for adolescents in the primary care setting does not show a statistically significant difference in diagnosing depression or referral to psychology and/or psychology but it may assist the provider in diagnosing depression and offers the opportunity to have the discussion of depression with adolescents. The increase rate of diagnosis of depression after the initiation of the DSP from an average of 6.5-8.5, may indicate that a protocol to identify depression in the pediatric primary care setting may improve the provider recognition of depression. Recognizing depression is the

first step to appropriate mental health care. The rate of referral to psychology and/or psychology also increased after the implementation of the DSP from an average of 5.7 – 7.5. The implementation of the DSP may assist the provider to recognize the need for appropriate referral to a mental health provider. The use of standardized tools for depression screening has shown varied results throughout the literature but standardization can have an improvement on provider confidence in diagnosing mental health disorders as well as improvement in documenting follow up and consistency through the health care system.

Chapter Five

Summary

Implementing a protocol for standardized depression screening in a large pediatric practice across multiple sites is a challenging prospect but may have a benefit to providers and patients. Use of a standardized screening tool to diagnosis depression and appropriately refer is not the final step in the process of mental health care in the primary care setting but just the beginning of a process that may improve mental health care of adolescent patients in the primary care setting.

Limitations

Many limitations were found during this project. Significantly the chart review of the well visit in the sample of four providers. Within this sample, the review of the EMR was for the diagnosis of depression. There was not a review of the depression screening tool itself to determine if the actual diagnosis was based on a score that defines depression. PHQ 9 A score of 11 or above is defined as a diagnosis of depression and should be followed up. The four providers that were included in the project are all mental health champions and may already appropriately diagnosis and refer for mental health disorders so using a tool may not make a significant difference. This is also not generalizable based on the difference in provider and patient demographic, education and socioeconomic factors. Although the depression screening tool PHQ 9 A has been validated for adolescents, the project was not evaluating the tool and this may have influenced the results. The implementation of the tool may also have affected the results as there was no consistent standard on how the PHQ 9 A was discussed with patients. Although each provider agreed at the onset to place the diagnosis of depression using only ICD 9 diagnosis codes 311F, 311FP, 311 DG, 311 BC, 311 BN, 296.20 BP, 296.20 BV, 296.90, and

309, they may not have documented appropriate diagnosis and therefore a positive depression screen may have been missed.

Implications to Nursing and to the DNP Essentials:

The project demonstrates a need for further evaluation on mental health care of the adolescent in the primary care setting. There are multiple studies evaluating screening practices but screening is just the initial step. As primary health care providers, advance practice nurses need to use evidence based research to integrate mental health care into practice. Essential II: Organizational and systems leadership for quality improvement and systems thinking. Using the findings from the evaluation of the quality project pertaining to adolescent depression screening in primary care will promote the further development and coordination of identifying and treating mental health disorders by advance practice nurses and pediatricians. Studies reviewing depression screening have shown the importance of only providing depression screening when staff-supported resources are in place to allow for further evaluation, treatment, and follow-up while the USPTF recommendation statement categorizes depression screening with support a Grade B, however without support the recommendation drops to a Grade C (USPTF, 2009). The benefit to screening will be demonstrated in the coordination of mental health care in the adolescent population. Essential III: Clinical scholarship and analytical methods for evidence-based practice. This project focused on the implementation of a standardized depression screening protocol. By focusing on mental health care of the adolescence. Pediatric primary care nurses may be encouraged to take the next step utilizing The National Association of Pediatric Nurse Practitioners (NAPNAP) position statement on integration of mental health in primary care to offer anticipatory guidance, prevention strategies, standardized screening, early and evidence-based intervention, and timely follow-up.

Essential IV: Clinical prevention and population health for improving the nation's health. As the health care system moves to population health, one of the key elements is coordination of care and evaluating outcomes through the continuum. As nurses we have always viewed health as the state of complete physical, mental and social well-being. Using a depression screening protocol for adolescents in primary care practice can begin to focus on the significance of mental health to the patients and family wellbeing.

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Appendix A

Diagram 1

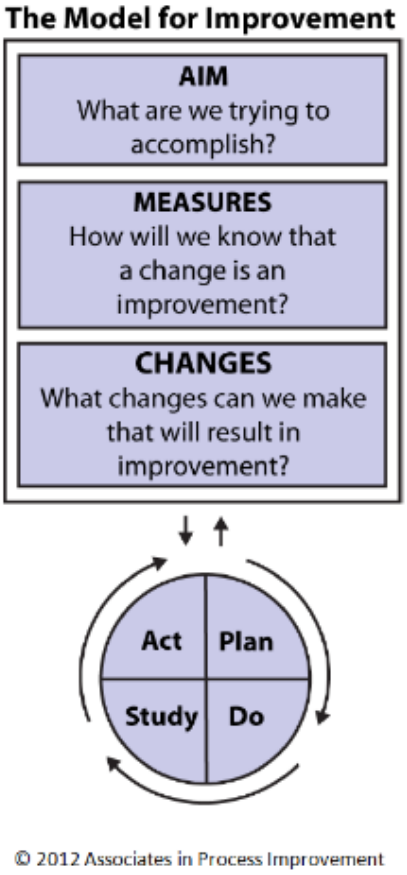
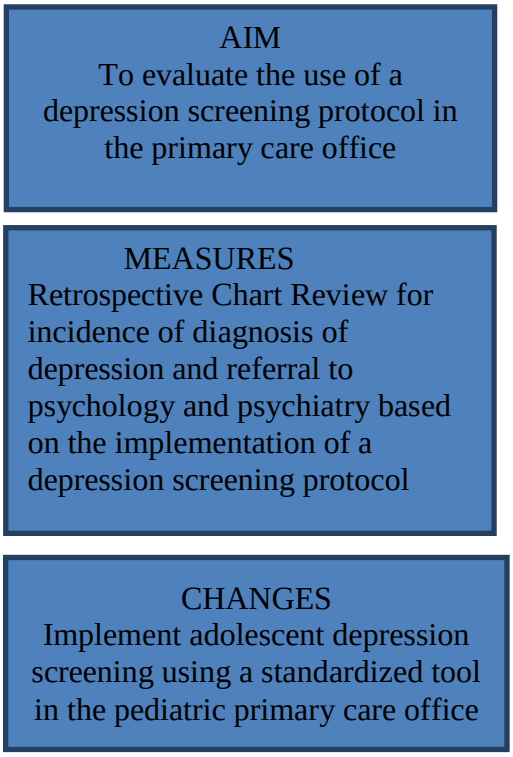


Diagram 2



Plan:

- Objective: To evaluate the implementation of a depression screening protocol in the pediatric primary care office.
- Predictions: Implementation of depression screening protocol will improve the process of depression screening of adolescents vs no depression screening protocol
- Plan: Literature review of adolescent depression screening tools and practices

Do:

- Implement PHQ-9 screening for depression at primary care visits of adolescents at four sites same four practice sites: April 2014 - December 2014.
- Coordinate with the Ohio AAP Building Mental Wellness Learning Network

Study:

Obtain IRB approval to collect data retrospective chart review from these four providers.

- Analyze the data and summarize the findings. Evaluate the implementation of a depression screening protocol.

Act: Implement changes based on results. Revise plan based on findings. Disseminate information to other practice sites. Based on results, implement depression screening using standardized tool to another group of pediatric primary care practice sites within the larger hospital organization. (Repeat the cycle.)

Appendix B

Data Collection Form
Pre Depression Screening Protocol/Post Depression Screening Protocol

Provider Number	Visit Number	Depression Diagnosis	Psychology Referral	Psychiatry Referral

Appendix C

PHQ-9 modified for Adolescents (PHQ-A)

Name: _____ **Clinician:** _____ **Date:** _____

Instructions: How often have you been bothered by each of the following symptoms during the past **two weeks**? For each symptom put an **"X"** in the box beneath the answer that best describes how you have been feeling.

	(0) Not at all	(1) Several days	(2) More than half the days	(3) Nearly every day
1. Feeling down, depressed, irritable, or hopeless?				
2. Little interest or pleasure in doing things?				
3. Trouble falling asleep, staying asleep, or sleeping too much?				
4. Poor appetite, weight loss, or overeating?				
5. Feeling tired, or having little energy?				
6. Feeling bad about yourself – or feeling that you are a failure, or that you have let yourself or your family down?				
7. Trouble concentrating on things like school work, reading, or watching TV?				
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you were moving around a lot more than usual?				
9. Thoughts that you would be better off dead, or of hurting yourself in some way?				

In the **past year** have you felt depressed or sad most days, even if you felt okay sometimes?

☐Yes ☐No

If you are experiencing any of the problems on this form, how **difficult** have these problems made it for you to do your work, take care of things at home or get along with other people?

☐Not difficult at all ☐Somewhat difficult ☐Very difficult ☐Extremely difficult

Has there been a time in the **past month** when you have had serious thoughts about ending your life?

☐Yes ☐No

Have you **EVER**, in your WHOLE LIFE, tried to kill yourself or made a suicide attempt?

☐Yes ☐No

***If you have had thoughts that you would be better off dead or of hurting yourself in some way, please discuss this with your Health Care Clinician, go to a hospital emergency room or call 911.*

Office use only: **Severity score:** _____

Modified with permission from the PHQ (Spitzer, Williams & Kroenke, 1999) by J. Johnson (Johnson, 2002)